

and the distal end of a radius of a small species of *Rhinoceros* (? *Aceratherium*), portions of the carapace of a very large Chelonian, probably a species of *Testudo*, fragments of the shell of *Trionyx*, and some Crocodilian remains.

From some portions of matrix adherent to some of the bones it appears that they are preserved in a bed of tough clay with much calcareous matter and numerous grains of blown sand; this deposit is probably of lacustrine origin, but in the absence of any molluscs or other invertebrates, it is not possible to be certain either as to its origin or as to its exact age. Judging from the *Dinotherium* remains, the beds are probably lower or middle Miocene. If they should fortunately turn out to contain a rich mammalian fauna, probably this discovery will lead to a great advance in our knowledge of the history of several groups of Artiodactyls, of the Hyracoids, and possibly of the Anthropeidea. It is greatly to be desired that a careful collection should be made as soon as possible.

#### EXPLANATION OF PLATE XLVIII.

- Fig. 1. *Dinotherium hableyi*, portion of left ramus of mandible with *pm.* 4, *m.* 2, *m.* 3, from above; 1 *a.*, ditto, from side. Type specimen.  
 2. Ditto, crown of *m.* 2 of another individual.  
 3. Ditto. *pm.* 3 of the type specimen from above; 3 *a.*, ditto, from side.  
 4. Ditto, crown of *pm.* 3 of another individual.  
 5. Ditto, left calcaneum from inner side.

*cab.*, facet for cuboid; *ect.*, ectal facet; *sus.*, sustentacular facet; *t.c.*, tuber calcis.

All the figures are  $\frac{1}{3}$  natural size.

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#### EXHIBITIONS AND NOTICES.

June 13, 1911.

EDWIN T. NEWTON, Esq., F.R.S., in the Chair.

MR. H. G. PLIMMER, F.R.S., F.Z.S., Pathologist to the Society, presented a Report on the Pathological Examination of Rats (*Mus decumanus*) caught in the Regent's Park and in the Society's Gardens. 500 rats had been examined between the 1st of January and the 17th of May, 1911, all in a precisely similar manner. The spleen, lungs, glands, and blood were examined microscopically; and from any animal which looked in any way unhealthy cultures were made.

The results were summarized as follows:—5 rats were caught in the Park, and 495 in the Gardens: 283 of these were males and 217 females.

3 rats had tubercle, 10 had tapeworm cysts in the liver, 49 had *Trypanosoma lewisi* in their blood, 2 had empyema (not tubercular), 1 had a tumour of the lower jaw (the result of an old injury), and 1 had pleuritis and hydrothorax (not tubercular).

Bacteria were found in 71 rats: in 40 in the lungs, and in 31 in the spleen.

Saccharomycetes were found in the lungs of 16 rats.

Fleas were found on 4 rats, and lice on 3 rats.

The general condition of the rats was very good, and in none was anything at all suspicious found.

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Dr. R. W. SHUFELDT, C.M.Z.S., sent for exhibition a photograph he had taken of a living specimen of a male albino Woodchuck, *Arctomys monax*, that had been sent to him from Virginia, U.S.A.

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Mr. R. E. HOLDING exhibited and made remarks upon the Horns of a Highland Ram, a Fallow Deer, and a Roebuck, which were fused at the base, and also the skull of a coursing Greyhound with abnormal dentition.

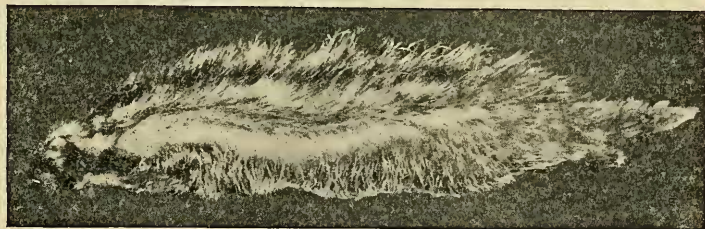
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Mr. R. I. POCKOCK, F.R.S., F.Z.S., Superintendent of the Society's Gardens, exhibited the skin and skull of a specimen of the rare Crested Rat, *Lophiomys ibeannus* Thos., which had been sent from Nakuru for the Zoological Gardens by Mr. R. B. Woosnam, C.M.Z.S., but had unfortunately died on the voyage. After alluding to the well-known peculiarities of the skull in this Rodent, Mr. Pockock drew attention to the arrangement and coloration of the hair (text-fig. 190), and expressed the opinion that the alternating areas of black and white with which each individual hair is ornamented, must make the animal conspicuous at dusk, if confidence be placed in the analogy supplied by such animals as Porcupines and Zorillas. The coat consists of two kinds of hair,—a softer close-set under-fur dusky grey at the base, then white, then dark at the tip, and much longer, coarser hair usually dark at the base, then white, then black, then white at the tip. These hairs are so arranged that the dark and white bands of the under-fur coincide exactly with the alternating bands of the same colour in the coarser hairs, while the long white tips of the latter project clear of the rest of the coat. From this arrangement it results that when the hair is raised the median white bands combine to form a continuous white mass thrown into relief by the dusky base and the distal black area, the whole being surmounted by the white tips of the long hairs shining with almost silvery lustre.

The coat of the upper side, moreover, is divided into three definite regions—a median dorsal and a lateral on each side—by a band extending from the shoulder to the hip and consisting of subspiniform greyish hairs of peculiar spongy texture, and thick in the middle but narrowest at the base and apex. When the animal is viewed from above with its coat erect, the white areas of the region on each side below this dividing band form a

continuous white lateral stripe which anteriorly merges more or less, according to the species, with the white area on the summit of the head; and when seen from the side the same white stripe is visible as well as the white area of the hairs of the dorsal crest.

Text-fig. 190. .



Dorsal and side views of *Lophiomys ibeanus*.

In the typical form of *Lophiomys*, namely *L. imhausi*, the tail is longer and much whiter and the frontal band much longer and more conspicuous than in *L. ibeanus*. These two features

conjoined must, theoretically, combine to make the former species, or race, more easily seen at night than the latter.

That the Crested Rat is nocturnal was proved by observations made upon the specimen of *L. imhausi* that was kept in the Jardin d'Acclimatation, Paris. It was also recorded of this animal by Milne-Edwards that when irritated it raised its dorsal crest erect and defended itself by biting vigorously.

Mr. Pocock concluded by remarking that the specimen exhibited, which before being skinned was perfectly fresh having been kept in a refrigerator, had a most peculiar but indescribable smell. From this it might be inferred that *Lophiomys* was perhaps a protected self-advertiser. On the other hand, it was considered possible that it might be a mimic of the Porcupine, since the coloration of the two was in a general way very similar\*.

## PAPERS.

### 41. On an Amphipod from the Transvaal. By the Hon. PAUL A. METHUEN, F.Z.S.

[Received April 27, 1911: Read June 13, 1911.]

(Plates XLIX.—LI.†)

#### *Introduction.*

About twelve months ago, Mr. Hewitt, of the Albany Museum, Grahamstown, who, at that time, was at the Transvaal Museum, Pretoria, communicated in a letter to the Rev. Noel Roberts and to me, his discovery of a blind Amphipod together with some Copepods in a cave at Irene, which lies about 9 miles south of Pretoria; at the time of writing he considered the species to belong to the genus *Eucrangonyx* Stebbing. Owing to other work he postponed the description of it, and, when I came out some few months ago, he very kindly gave me the specimens collected to deal with.

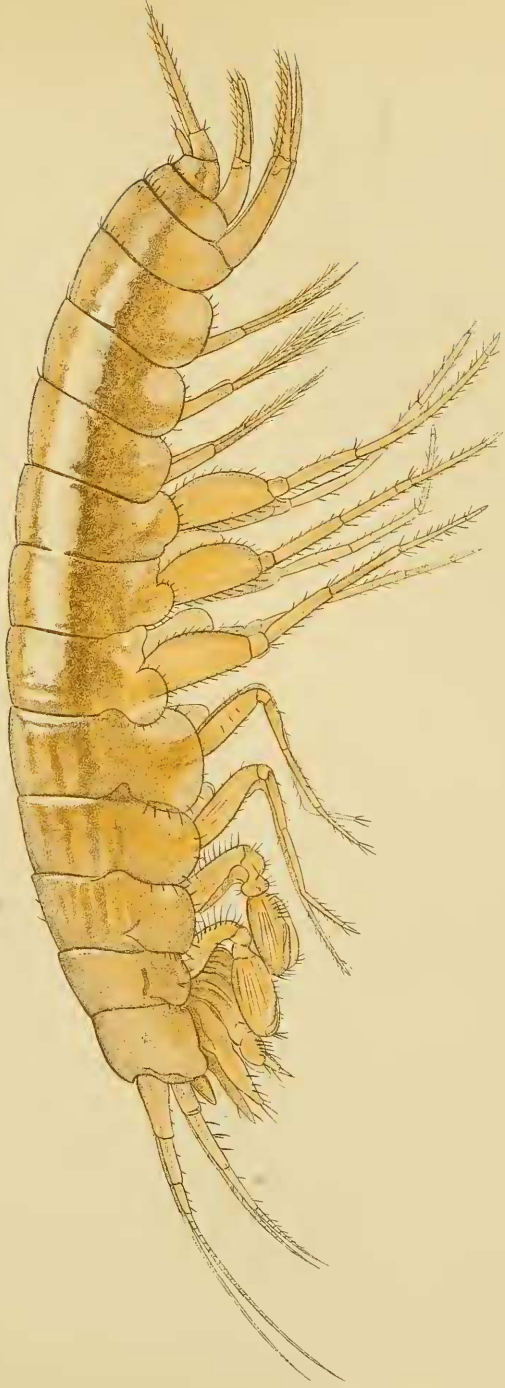
Not long ago I visited the same cave and secured two specimens: none of the Amphipods taken from this cave were large.

In February, Mr. Austen Roberts and myself went to the Makapan Caves, which lie in hilly country about 15 miles west of Potgietersrust, in the Transvaal, for we heard that some of these caves contained water, and we hoped to obtain a more plentiful supply of these cave Crustacea.

The first cave we visited—the more famous historically—contained nothing we were in search of, so we directed our steps to

\* In the discussion that followed this exhibition, Dr. R. E. Drake-Brockman, who was acquainted with *Lophiomys* in Somaliland, remarked that the natives of that country regarded these rats as young Porcupines.

† For explanation of the Plates see p. 957.

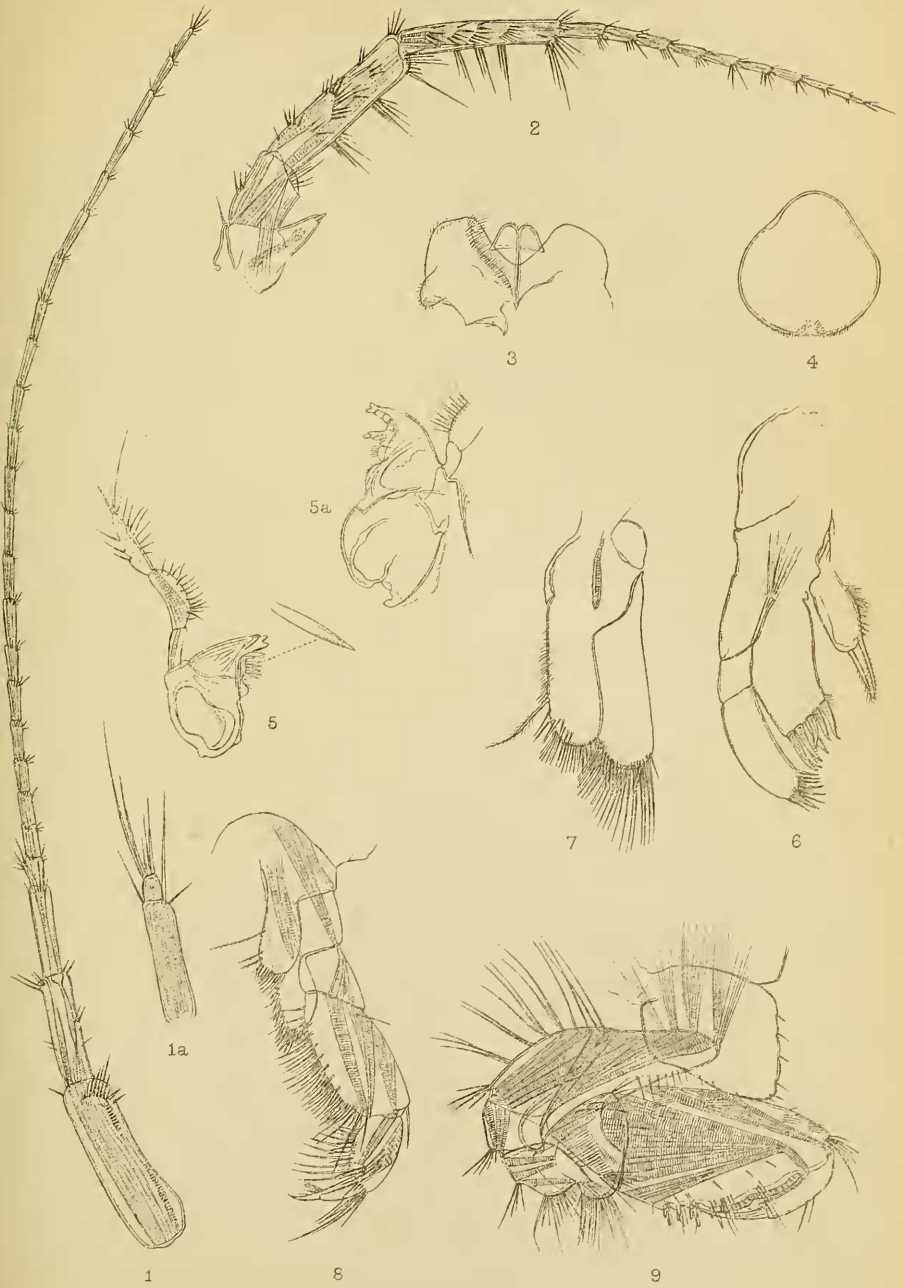


West, Newman. chr.

EUCRANGONYX ROBERTSI.



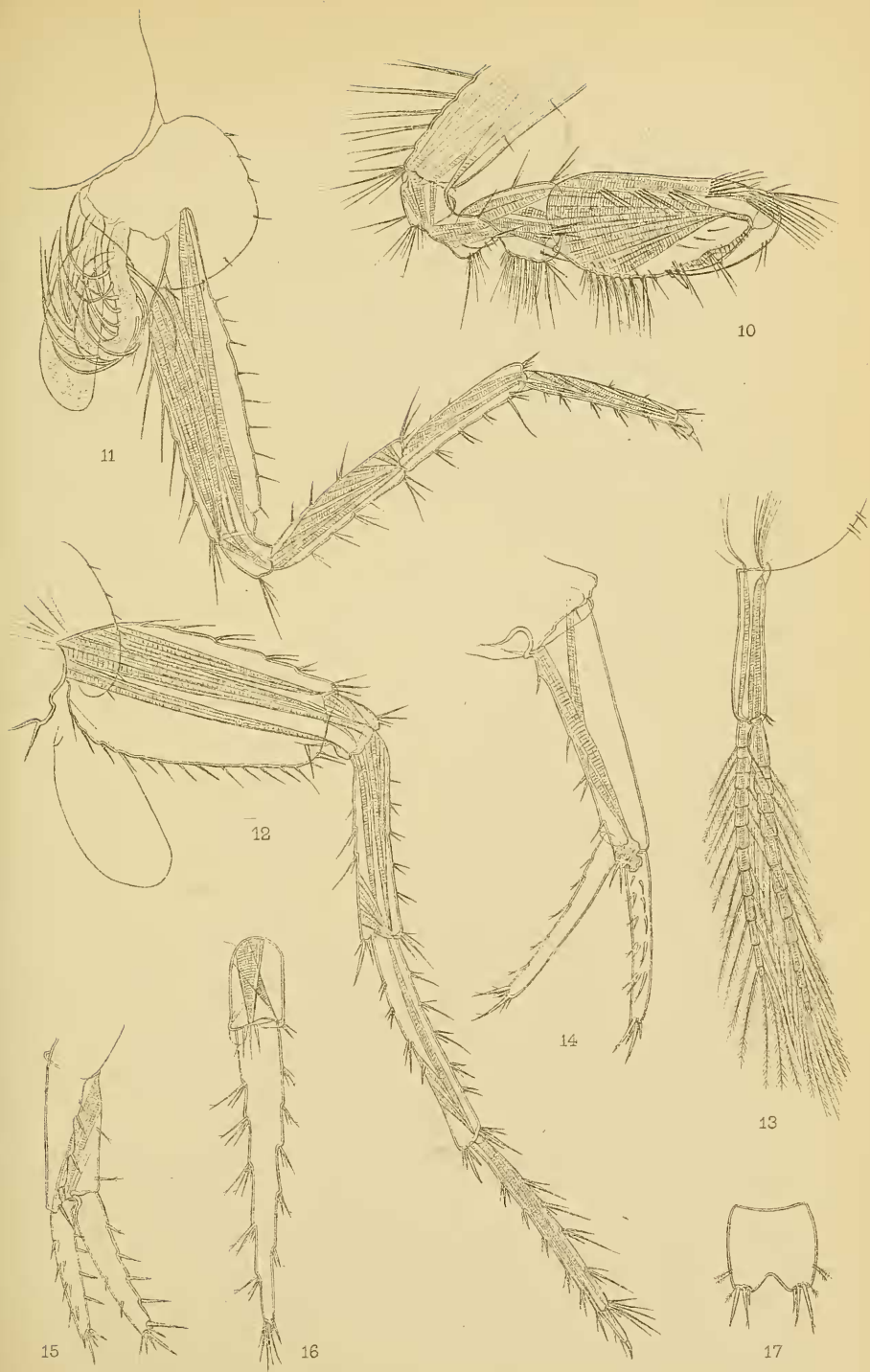




West, Newman lith.







West, Newman lith.

EUCRANGONYX ROBERTSI



two others on the opposite side of the valley. In both we found a plentiful supply of water.

As to these two caves, one was considerably deeper than the other. In the first one we entered, we reached the level floor fairly soon; here we found shallow sheets of water supporting a large number of Gammarids, Copepods, and Ostracods; the bottom was muddy and the floor of the cave generally covered by the droppings of bats. No light entered as far in as this. The bottom of the second cave we reached after a rather long, steep, and winding descent: the stalactites and stalagmites showed it to be a limestone cave. The water here was as clear as crystal, rich in Gammarids and poor in Copepods; there were no Ostracods, but a few aquatic worms were taken; some terrestrial Isopods and some spiders were also found. Though the water appeared quite still, a fresh supply was without doubt being added continually. The bottom was rocky, covered by a thin layer of fine mud, and the floor of the cave, as in the other, was strewn with bat droppings.

Later in the day a few Gammarids, similar in every respect to the others taken, were caught under stones at a spring in the vicinity, but none were ever taken in the spruit which runs through the valley, where the numerous crabs would make short work of such fry.

All the Gammarids so far found in the Transvaal represent a single species, belonging most probably to the genus *Eucrangonyx* Stebbing, and closely related to *Eucrangonyx vejlovskyi* Stebbing, *vide* (3. p. 389 and 4). However, this little cave form has not been placed in this genus without notice being taken of certain resemblances and affinities to the genus *Niphargus* Schiödte (3. p. 405), more so to *Neoniphargus* Stebbing (3. p. 404 and 2, p. 73), and the genera *Crangonyx* Bate and *Paracrangonyx* Stebbing (3. p. 369 and 1. p. 218). In many ways this species appears to be a generalized *Niphargus-Crangonyx* type, as is seen mainly in the nature of the telson and third uropods; the breadth of the second joint of pereopods 3 to 5, and the total length of these appendages as compared to pereopods 1 and 2; the shape and size of the gnathopods; the number of setae and spines on the inner and outer plates of the maxillula; the structure of the lips; the size of the accessory flagellum and total length of the antennule.

It is in the sense of the comparative generalization of its structure that this creature may be called primitive; primitive as opposed to the more recent genera *Paracrangonyx*, *Apocrangonyx*, and *Crangonyx*, but, on the other hand, more recent than the genus *Gammarus*, and probably *Niphargus*. This conclusion has been arrived at more by the study of the telson than of any other part (*vide* 1. p. 219).

The large size of the outer ramus of the third uropod appears to be almost peculiar, but, judging from Chilton's (1. p. 218) remarks on the variability of this element in *Crangonyx*, this character can be given apparently too much attention.

It may be as well to record the outstanding characters of this new species in order, and mention points of similarity and difference between it and the various genera and species mentioned above, as they appear significant in leading us to some conclusion as to the proper systematic position of the only known fresh-water Amphipod from South Africa (unless some littoral marine forms, taken in a stream in the Cape Peninsula and in vleis on the Cape Flats within two or three miles of the sea, be considered as true freshwater creatures).

The antennules are longer than the antennæ, the accessory flagellum small and 2-jointed, subequal to the first joint of the normal flagellum. In *Eucrangonyx vej dovskiyi*, the second joint of the accessory flagellum is half the length of the first. In *Neoniphargus*, the accessory flagellum is 2-jointed, longer or shorter than first flagellular joint.

Upper lip rounded as in *Niphargus*, *Crangonyx*, etc.

Lower lip, inner lobes fairly small; in *Paracrangonyx* they are small; in *Niphargus* well developed; in *Crangonyx flagellula* Benedict, very small. Mandibular processes moderate; in *Eucrangonyx vej dovskiyi* unusually prolonged.

Mandibles normal, dissimilar. Second joint of palp, subequal to third, is rather broad owing to convexity of inner margin; in *Eucrangonyx vej dovskiyi* second joint broad, considerably longer than third; in *Paracrangonyx* third joint subequal to second, which is not expanded (in figure); in *Niphargus* third joint longer than second.

Maxillula: inner plate with two plumose setæ, outer with seven spines serrated on the inner side; two or three setæ to inner plate in *Niphargus* and *Neoniphargus*, the former with seven spines to the inner plate, the latter with six; in *Paracrangonyx* the same as for *Eucrangonyx robertsi*; inner plate of *Crangonyx* with six setæ, of *Eucrangonyx vej dovskiyi* with four setæ.

Maxilla as in *Eucrangonyx*.

Maxillipeds as in *Eucrangonyx* (most probably), not unlike those in *Paracrangonyx*.

The two pairs of gnathopods as in *Eucrangonyx vej dovskiyi*, but palm equal to hind margin; in *E. vej dovskiyi* it is much shorter.

Pereiopods 1 and 2 slender and slightly shorter than succeeding pereiopods; in *E. vej dovskiyi* they are "said to be slightly longer." Pereiopod 5 the longest. The second joints of all the pereiopods much as in *E. vej dovskiyi*.

Pleopods normal; in *Paracrangonyx* slight and one-branched.

In uropod 1, peduncle a little longer than the equal rami; in *E. vej dovskiyi* as long.

In uropod 2, rami slightly unequal, peduncle as long as shortest ramus; in *E. vej dovskiyi* shorter than rami.

Uropod 3 has peduncle half the length of long outer ramus, inner ramus minute with single spine; in *E. vej dovskiyi* peduncle half the length of outer ramus, inner ramus flattened, rudimentary, shorter than peduncle; in *Crangonyx* and *Paracran-*

*gonyx* uropod 3 not elongate, so also *Neoniphargus* which has inner ramus minute; *Niphargus* has outer ramus long, two-jointed, and the inner small.

Telson with emargination and almost square, as in *E. vej dovskiyi*; in *Crangonyx* entire or partly cleft; in *Paracrangonyx* entire; in *Neoniphargus* partly cleft; in *Niphargus* deeply cleft.

This evidence seems sufficient to warrant the inclusion of this new species in the genus *Eucrangonyx* near the species *E. vej dovskiyi*.

I have taken the opportunity here offered of naming the species after the Rev. Noel Roberts, in recognition of his enthusiasm for this branch of zoology.

*Detailed description of the new species.*

Family GAMMARIDÆ Leach.

Genus EUCRANGONYX Stebbing.

EUCRANGONYX ROBERTSI, sp. n. (Plate XLIX.)

*Female*: length of largest specimen taken 11 mm.\*; colour dirty yellow or pink in the shallower cave near Potgietersrust, semi-transparent white in the deeper cave. No trace of eyes was discovered.

Body rather compressed, smooth, no carina, rostrum barely perceptible, a few minute spines on dorsal part of head and third segments; the last three or five segments with spines on posterior margin.

First four coxal plates of pereion deeper than the rest, the first smallest, the third and fourth deepest; the fourth plate broader than the others; side-plates of the fifth, sixth, and seventh pereion segments small, those of fifth and sixth deeply emarginate behind. These coxal plates bear marginally small spines.

*Antennules* (Pl. L. fig. 1) long, longer than the antennæ; flagellum much longer than the peduncle; first joint of the peduncle a little shorter than second and third joints together; second joint rather longer than third; accessory flagellum (Pl. L. fig. 1 a) two-jointed—both joints armed with setæ,—minute, hardly as long as first joint of flagellum; all the joints of the antennule provided at their distal extremity with moderate setæ, of which one or two on each segment are conspicuously longer than the rest; the second joint of the peduncle has also two groups of small setæ and one other seta besides about its middle length; the arrangement of the setæ on each joint of the flagellum appears to be constant in disposition after the eighth joint, and to be about seven in number.

*Antennæ* (Pl. L. fig. 2) about four-sevenths the length of the

\* The length includes that part from the anterior margin of the head to the posterior margin of the last pleon segment.